MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

MVR2063 – SIMULATION MODELLING 2

(All sections / Groups)

17 OCTOBER 2019
2:30 p.m – 4:30 p.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 7 pages including cover page with 10 questions in Section A and 4 questions in Section B. Total marks is 40.

2. Answer **ALL 10 questions in Section A.** Each question carries 1 mark.

3. Answer **ONLY 3 out of 4 questions in Section B** and the distribution of the marks is as stated.

4. Please write all your answers in the answer booklet provided.

Section A
Answer All Questions. Total marks are 10.

1. A 3D artist must be provided with a concept art of a character design before they can begin modelling a character in a 3D software. Which of the following shows the important of concept art?
   A. It allows them to use the concept art as reference for animation.
   B. It allows them to understand the proper skeletal placement of a human for rigging process.
   C. It allows them to use the concept art as reference for the human muscle flow.
   D. It allows them to understand the history, story and role of a character and apply it to the design.

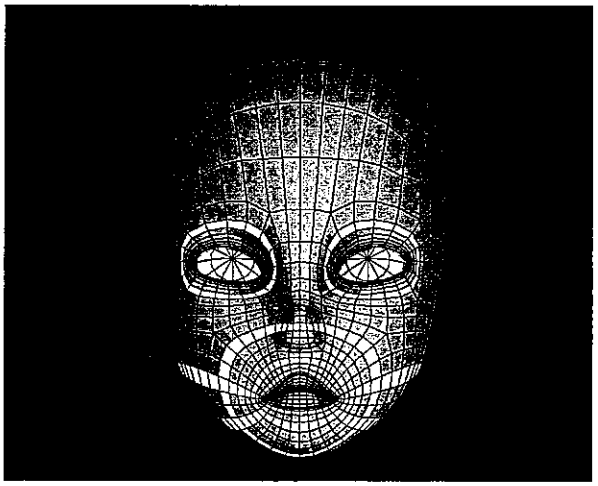

Figure 1

2. Why is it important for a 3D artist to model the facial of a character according to the topology shown in Figure 1?
   A. It allows them to imitate the look of a human body which creates the sense realism in low poly modelling.
   B. It allows them to imitates the muscle flow of a real human body which allows for better deformation.
   C. It allows them to have better understanding of the human face.
   D. It allows them to imitate the skeletal placement of a human body which will be helpful for the rigging process.

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3. What is the shortcut key to enable the "Cut" tool inside the 3Ds Max software?
   A. Alt + C
   B. Alt + D
   C. Ctrl + C
   D. Ctrl + D

4. Which of the following modifier allows you to change a cube into a sphere inside the 3Ds Max software?
   A. Spherify
   B. Symmetry
   C. Spherification
   D. Sphere

5. Based on the lecture given in class, what is the estimated number of polycount of a 3D character for desktop platform according to the Unity optimal performance for character modelling?
   A. 300 – 1500
   B. 100 – 1000
   C. 3000 – 5500
   D. 1500 – 4000

6. What is the function of a Multi-Sub Object inside the material editor in the 3Ds Max software?
   A. Allows you to render multiple 3D object at once.
   B. Allows you to create UV for each material.
   C. Allows you to assign multiple texture using single material.
   D. Allows you to bake the normal map from a high poly model to a low poly model.

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Figure 2

7. Figure 2 shows the "Search 3Ds Max Command" box inside the 3Ds Max software. Which of the following commands is the DEFAULT shortcut key to enable this action?
   A. Z
   B. F
   C. P
   D. X

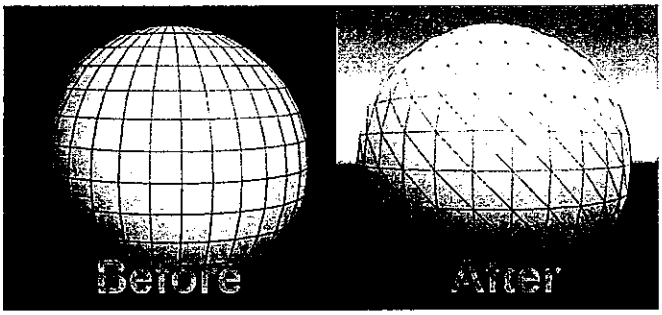

Figure 3

8. Figure 3 shows an object before and after being imported into the Unity Game Engine. Why does the topology of the model change from Quad to Tris?
   A. It allows the game engine to subdivide the topology without any issues.
   B. Tris are easier to use for modelling a 3D objects compare to Quads inside the game engine.
   C. Tris are the simplest 3D shape and guaranteed to be flat, which allows the game engine to calculate the tris easily.
   D. Quads are the simplest 3D shape, which allows better deformation in the game engine.

9. What is the reason behind the application of Tris on the joint area such as the knees and arms of a 3D character?
   A. Better deformation for high poly character.
   B. To ensure fast rigging process for 3D character.
   C. Better deformation for low poly character.
   D. To make sure the joint area does not have weird artefacts.

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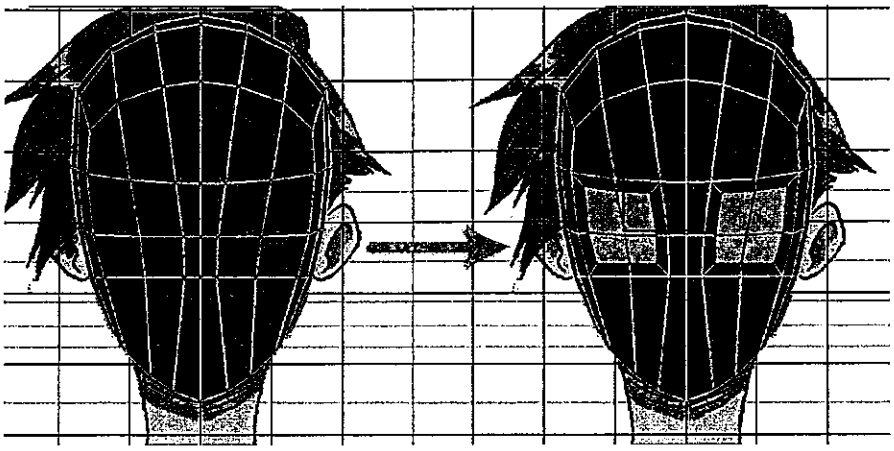

Figure 4

10. Figure 4 shows the process of creating the eye loop of a 3D character. Which of the following tools inside 3Ds Max software can be used to achieved the result as show in the figure above?
    A. Connect
    B. Inset
    C. Target Weld
    D. Bevel

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SECTION B

Answer only THREE (3) questions out of four. Each question carries 10 marks.

Question 1

In 3D modelling, UV is a process in which a 3D artist must go through before they are able to paint the texture to the 3D model.

a. Briefly explain what is UV. [2 marks]

b. List out the two (2) types of UV modifier which exists inside the 3Ds Max software. [2 marks]

c. Based on Question 1 (b), explain the 2 types of UV that has been listed. [6 marks]

Question 2

I. Texturing is a process that allows 3D artist to defines the surface detail of a 3D character or object.

a. List out the four (4) types of common texture map used in 3Ds Max software.

[4 marks]

II. Physically Based Rendering (PBR) is a method of shading and rendering that provides a more accurate representation of how light interacts with surfaces.

a. Briefly explain the Metallic workflow.

[2 marks]

b. List out the advantages and disadvantages of using the Metallic workflow.

[4 marks]

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Question 3

Topology plays an important role in ensuring your 3D character model does not have any issues when importing it to the real-time applications.

a. What is topology? [2 marks]

b. Why does topology matters the most in 3D character modelling? Briefly explain the reasons.

[6 marks]

c. Briefly explain what is Ngons and how will it affect the 3D character modelling.

[2 marks]

Question 4

In 3D character modelling development, it is important for a 3D artist to understand which pose they should apply on the 3D character.

a. What are the two (2) types of character poses which are mainly use in the creative industry?

[2 marks]

b. Based on the Question 4 (a), explain the advantages and disadvantages for each of the types of poses listed.

[8 marks]

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